culturist have been touched the least of all. These rural pursuits are particularly difficult to reach, not because the people who follow them are unwilling to learn, but because most of the instruction has been out of sympathy with them and unadapted to them. The more difficult the problem, the greater is the need of solving it. The rural industries must be enlightened by instruction which shall be both educational and useful. Nothing less can satisfy the demands of humanity and patriotism.

L. H. BAILEY.

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*ON SCHOOL HYGIENE.**

HYGIENE is applied physiology. It is the science and art of promoting and preserving health, which we take to mean the greatest energy of each part, compatible with the greatest energy of the whole organism. School hygiene as an art is concerned with all measures that science and experience have shown to be helpful and efficacious for securing the normal growth and development of pupils and the normal activity of teachers, under the conditions incident to school life. Nearly one-quarter of the total population of the United States is at present subject to the conditions of school life, or, in other words, is engaged in the sedentary occupation of schooling. Of our school population over 96% is found in elementary schools, and over 18% is found in cities. Urban conditions at their best are less favorable than rural conditions for rearing full-grown, vigorous, healthy children. City-bred children of school age in America —at least in the six great cities on the Atlantic seaboard—are less favorably situated than their contemporaries in certain European cities, it would appear.

Thus the death rate per 1,000 living at the age-period 5–15, which is the healthiest decade of life among civilized men, is less in London than in Brooklyn, Philadelphia, New York, Washington and Baltimore, or in Boston, whose death rate is higher than in any of the cities named, while Berlin has a lower death rate than any of these cities, except Washington and Baltimore. The mortality from diphtheria among children of school age — and from consumption among female school teachers—is markedly greater in Boston than in any other of the American cities named above. No class of wage earners in Boston, so far as the mortality rates, analyzed by occupation, of the U. S. Census Bureau go, has so high a death rate from consumption as women school teachers, excepting marble and stone cutters. The fact that Boston is the only one these six cities which habitually neglects to wash her schoolhouse floors and corridors from year to year and decade to decade is not without significance.

It cannot be denied that municipal sanitation and school hygiene are more highly organized and successfully administered in the leading cities of Europe than in the leading cities of America. Indeed, school hygiene had no place or standing among the arts and sciences in America. There appears to be no department of public health so miserably endowed, so incompletely organized, or so wellnigh universally neglected by publicists, scientists and publishers as school hygiene. Without resorting to foreign books, periodicals and official reports, it is quite impossible for the student to inform himself as to the nature and results of the investigations and experiments made during recent years for the improvement of the health of the school population on the continent of Europe.

The public schools are organized, maintained and regulated by the State, which clearly owes it to itself to take adequate measures to prevent the school population

*Abstract of report of Chairman of Committee on School Hygiene—read before child-study section of National Education Association, at Denver meeting, July, 1895.

from contributing to the spread of epidemic diseases and thereby endangering the public health. It is also the duty of the State, particularly where attendance in school is compelled by law, to provide schoolhouses so placed, arranged and furnished that their occupants, both pupils and teachers, shall not be subjected to insanitary influences, or allowed to engage in unhygienic procedures in prosecuting their work. School boards as at present constituted, and teachers as at present trained for their profession, are unequal to organizing or administering a genuine and effectual system of school hygiene, such as the times demand in city schools. Experts in medicine, sanitation and hygiene are necessary, nay, indispensable for such a purpose.

If the public health is to be effectually guarded, the schools and those that frequent them should be subject to the inspection by properly trained representatives of the Board of Public Health, which board should have a voice in the selection of school sites, and in matters relating to the drainage, plumbing, heating, lighting and ventilation of schoolhouses. Ordinary physicians and teachers are not competent, as a rule, to pass intelligently upon questions of sanitary engineering which naturally arise in connection with the planning, erecting and furnishing of schoolhouses. Sanitarians, architects and hygienists should settle these and kindred questions. Even then there is room left for a special inspector or director of school hygiene, whose business it should be to see that teachers and janitors carry out such reasonable rules as may be laid down (with regard to the hygiene of the school, the class-room and the hygiene of the school child) by public health officers, sanitary experts and school officials acting together. The teachers should be made thoroughly conversant, during their professional training, with the hygiene of instruction and be required to conform to its principles in all practices and procedures which affect the eyes, ears, brains, muscles or bones of their pupils. These three classes of experts acting together could regulate the gymnastics and plays, hours of study, methods of instruction, in short, the school life of the children, in the interest of public health, personal hygiene and school efficiency.

The fact that no American university, medical school, technical school or normal school offers such theoretical and practical courses as are requisite for training up experts in school hygiene may be granted. But we submit that this state of things simply serves to emphasize the need of a campaign of education in the interests of hygiene in general and of school hygiene in particular. Let us strive to enlist the aid of physicians, sanitarians, educational authorities and philanthropists in planning and waging such a campaign. The ultimate aim of such a campaign would be the organization and maintenance of a comprehensive and effectual system of medical inspection and hygienic supervision of city schools and their pupils. To bring this about, the electorate must first be enlightened and aroused.

What can we do as members of the N. E. A. to further these ends?

1. We can utilize the literature of school hygiene in making known to the general and educational public the nature and results of European study and experiment.

2. We can urge the necessity of determining, by thoroughgoing investigation, the actual condition of the school population of our great cities, so that intelligent action may be taken to amend the most obnoxious and dangerous features of that condition.

3. We can endeavor to induce some progressive and influential university or technical school to grasp the idea that it would be performing a public service, and possibly enter upon a profitable speculation, if it

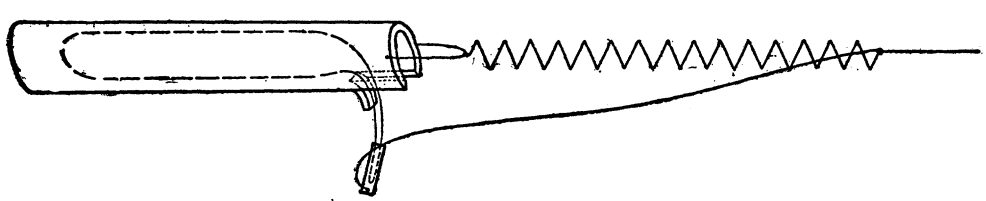
were to establish courses of instruction, similar to the best in Europe, for the training of experts in school sanitation and hygiene.

EDWARD M. HARTWELL.

BOSTON, MASS.

A SIMPLE APPARATUS FOR COLLECTING SAMPLES OF WATER AT VARIOUS DEPTHS.

VARIOUS devices have been used for collecting samples of water for bacteriological examination at different depths below the surface of a pond, but few of them are satisfactory. Some are too complicated and liable to get out of order; some are too expensive; some are too fragile for transportation; some cannot be well sterilized; while others have the besetting sin of operating at the wrong time or of failing to operate when required. Realizing the great importance of having a reliable method for collecting samples, the writer, after much experimenting, decided upon the form of apparatus here described.



It consists primarily of a glass tube $\frac{3}{4}$ inch in diameter and 5 inches long, closed at one end and having the other end drawn out at right angles and bent downwards as shown in the figure. The air is partially exhausted by means of an aspirator and the end of the tube sealed in the flame.

This vacuum tube is essentially the same as that first recommended by Pasteur, though he obtained his vacuum in a different way.

After being sterilized the tube is placed in the collecting frame, which consists of a piece of lead pipe about seven inches long and having an internal diameter of $\frac{7}{8}$ inch. At the upper end a strip of the lead is cut out and turned downwards, as shown in the figure, so as to form a rest for the bent arm of the glass tube. The glass tube is held in place either by a stopper pressed into the top of the tube or by a suitable spring clip passing around the bent arm and the projecting strip of lead. The weight of the lead is sufficient to sink the apparatus. A bail at the top of the lead pipe is attached to a spiral spring about eight inches long, which in turn is fastened to the cord or wire by which the apparatus is lowered. To the upper end of the spring there is attached a flexible wire, carrying at its lower end a small brass tube, one inch long, of such a diameter that it will easily fit over the end of the bent arm of the glass tube. The length of the flexible wire and the stiffness of the spring are so adjusted that when the apparatus is suspended by the cord in the water the flexible wire is slack; but when a sudden jerk is given to the cord the spring stretches so much that tension is brought on the flexible wire and a sudden pull communicated to the bent arm of the tube, resulting in the same being fractured. If the bent arm has previously been scratched with a file the break will be an even one.

The operation of collecting a sample is quite apparent. The glass tube being fastened in its place and the brass cap being put over the end of the bent arm, the apparatus is lowered to the required depth, care being taken that the cord runs out smoothly and without jerking. A sudden jerk is then given to the cord. This breaks